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Cannelton & Smithland Barges in Dam Gates

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Barges in Dam Tainter Gates

- This presentation looks at two very similar navigation accidents which resulted in barges obstructing dam gates on the Ohio River in Louisville District.
- M/V James Buky, Cannelton Dam, January 1991.
- M/V Captain Bill, Smithland Dam, April 2005.

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Barges in Dam Tainter Gates

- This type of accident occurs fairly frequently and generally under similar conditions.
- Typically under high flow conditions, with strong outdraft.
- Dam tainter gates are usually “all out” raised clear of the water and not impacted.
- Barges are normally cut loose to

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Barges in Dam Tainter Gates

- On many occasions the barges float through the gates, then sink below the dam, or sink above the dam without blocking gate operation.
- These incidents have no impact upon pool control, and are relatively easy to salvage once river flows decrease.
- The big problems are when the barges become wrapped around the piers, or otherwise prevent gate operation.

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Barges in Dam Tainter Gates

- The primary concern and responsibility of the Corps is to clear the gates to permit maintenance of the pool.
- This type of emergency situation generally warrants Corps assumption of responsibility from the vessel owner(s), in order to mobilize resources to respond rapidly.
- After the gates can be closed, salvors can operated at their own pace to

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Barges in Dam Tainter Gates
Loss of Pool

- Loss of pool can have severe effects by closing navigation with severe impacts upon industries and power generation, jeopardizing water supply through river intakes, and increasing the potential for bank failures.
- Accelerated scour below dam can threaten foundation stability of dams.
- Waiting for pool to equalize is not an attractive option, and must be avoided if at all possible

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Options to Clear Barge from Dam Pier

- Pull it upriver against the current.
  (Yeah, right).
- Pull in two from below dam.
  (Not safe, not likely).
- Chop through until the current rips it apart and carries it down river.
  (Let the current do most of the work).
- Last resort, let the pool go down and work under more favorable salvage conditons.

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My Preferred Alternative: Chop the Barge in Two.

- Likely Options Include:
- Floating crane with chopper beam.
- Personnel in basket from dam bridge with torches.
- Chopper beam lowered from dam bridge, dropped or driven.
- Use of tainter gates or emergency bulkheads to crush and chop, perhaps in combination with other methods.

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Floating Crane with Chopping Beam.

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Floating Crane with Chopping Beam.

- Done at Smithland to partially chop barge and contributed to ultimate success.
- Quickly became too dangerous due to falling river and increasing currents.
- Hard to work around dam bridge, boom tip destroyed some handrail.
- Potential for serious damage and danger from boom/bridge interaction.
- Requires good anchor system to descend from upriver.

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Personnel in Basket Lowered From Dam Bridge.

- Very dangerous, not very productive.
- Requires personnel-rated crane on dam.
- Can be beneficial for positioning equipment or other rigging.
- Not recommended for actual cutting of barge.

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Chopper Beam Lowered from Dam Bridge.

- Done at Cannelton in 1991, successfully.
- Sharpened beam was driven by pneumatic piledriver, suspended from emergency bulkheads.
- Limited circumstances where this approach is applicable, due to reliance upon bulkhead slot for lateral support and limited cutting width.
- Potential for greater benefits if

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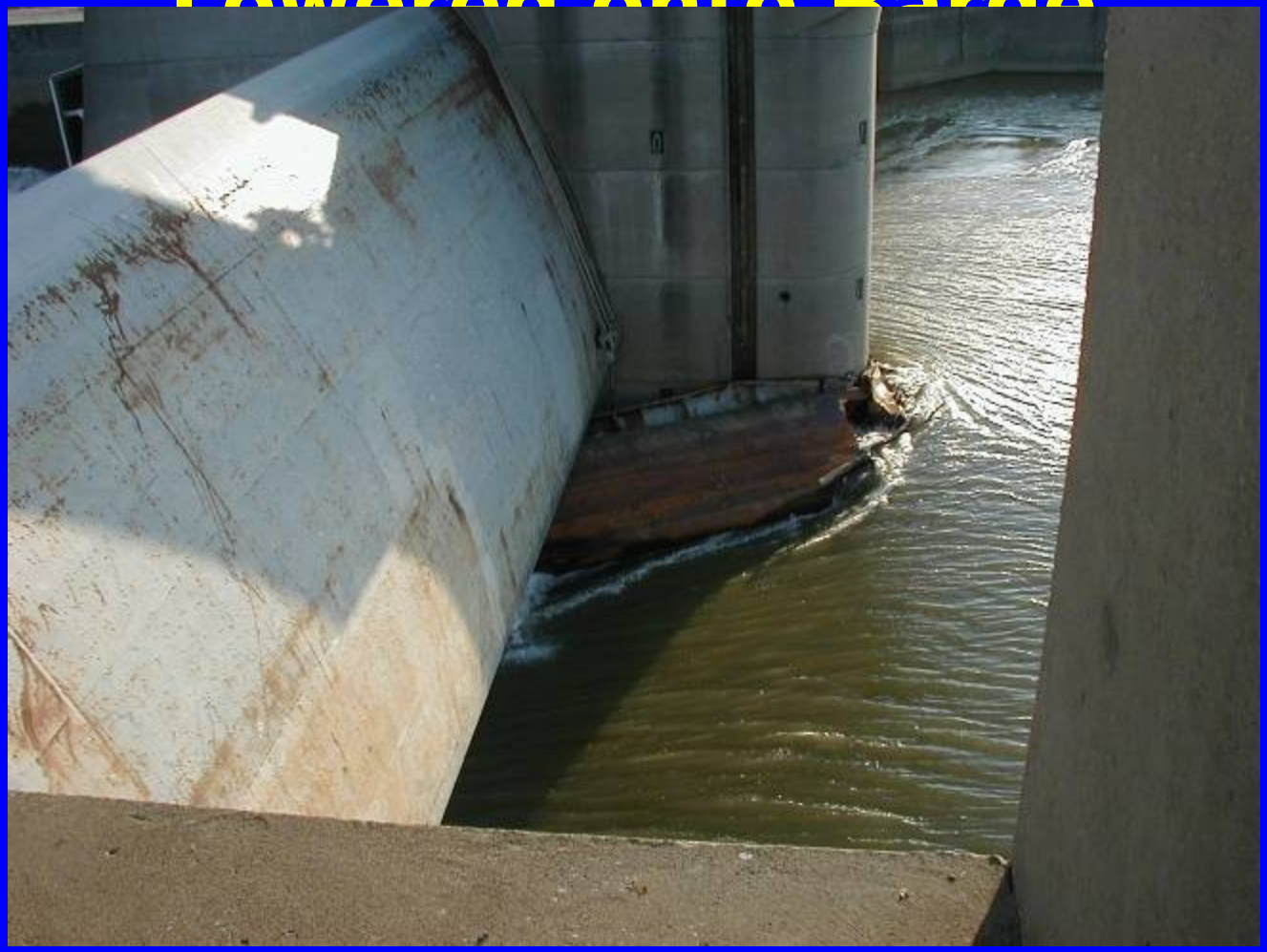
Tainter Gates or Emergency Bulkheads Lowered onto Barge



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The Road Ahead
How Can We Improve?

- This recurring issue needs a well engineered, safe, and accepted approach.
- A better way which could be adapted to many different locations with minor adjustments, would be highly beneficial and broadly applicable.
- The structure and means of positioning already exists at many locations with the dam service bridges and bulkhead cranes

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The Road Ahead
How Can We Improve?

- Need to develop a good solution when there is no emergency.
- Need to develop means mount and position which can be readily adapted to multiple structures.
- Should be capable of using several cutting methods: Torches, Chopper Beam, Diamond Wire Saw.
- Operational procedures and safety measures must be developed and approved prior to emergency use.

Any Questions or Comments?